CLAIMS

1. A microfluidic device that comprises a microchannel structure in which there are one, two or more flow paths (101;201a,b;301a,a',b) all of which comprises a porous bed I (104,204,304) that is common for all of the flow paths, which bed exposes an immobilized reactant R that is capable of interacting with a solute S that passes through the bed, characterized in that at least one (101;201a;301a,a') of the flow paths (101;201a,b;301a,a',b) comprises/comprise a second porous bed II (105,205,305) that is placed upstream of porous bed I (104,204,304) and is dummy with respect to interaction with solute S but capable of interacting with a substance DS that is present in a liquid aliquot together with solute S and is capable of disturbing the result of the interaction between solute S and said immobilized reactant R.

2. The microfluidic device of claim 1, characterized in that porous bed I (104,204,304) and porous bed II (105,205,305) are physically separated from each other.

3. The microfluidic device of claim 1, characterized in that the upstream end of porous bed I (104,204,304) is abutted to the downstream end of porous bed II (105,205,305).

4. The microfluidifc device of claim 3, characterized in that there is a porous membrane (106) between said upstream end and said downstream end.

5. The microfluidic device according to any of claims 1-4, characterized in that at least one of porous bed I (104,204,304) and porous bed II (105,205,305) bed is a packed bed of particles and the remaining porous bed, if any, is a porous monolithic plug.

6. The microfluidic device according to any of claims 1-5, characterized in that at least one of porous bed I (104,204,304) and porous bed II (105,205,305) comprises a solid phase material that is a size exclusion material.

7. The microfluidic device according to any of claims 1-6, characterized in that a) the disturbing substance is smaller than solute S and that at least porous bed II (105,205,305) in at least one of said at least one flow path comprises a solid phase material that is a size

exclusion material having an exclusion limit delaying the disturbing substance from passing through porous bed II) in relation to solutes.

8. The microfluidic device according to any of claims 1-6, characterized in that at least one, two or more (201b;301b) of the remaining ones of said one, two or more flow paths (101;201a,b;301a,a',b) is/are devoid of porous bed II.

9. The microfluidic device according to any of claims 1-7, characteerized in that porous bed II in said at least one, two or more flow paths comprises/comprise an immobilised reagent R_{DS} that is capable of interacting with the disturbing substance that is present together with a solutes.

10. The microfluidic device of claims 1-8, characterised in that said at least one flow path is two or more flow paths and that R_{DS} in at least one of said two or more flow paths differs from R_{DS} in at least one of the remaining ones of said two flow paths.

11. A microfluidic process carried out in a flow path (101;201a;301a,a') of a microchannel structure of a microfluidic device and comprising transporting a liquid aliquot containing a solute S through a porous bed I (104,204,304) that is placed in said flow path (101;201a;301a,a') and exhibits an immobilized reactant R that is capable of interacting with solute S during the transport, characterized in comprising the steps of

(i) providing said flow path (101;201a;301a,a') in a form that comprises a porous bed II (105,205,305) that is upstream of porous bed I (104,204,304) and dummy with respect to interaction with solute S but capable of interacting with a disturbing substance DS,

(ii) providing a liquid aliquot containing said solute S and said disturbing substance in said flow path (101;201a;301a,a') in a position that is upstream of porous bed II (105,205,305),

(iii) transporting the aliquot through porous bed II (105,205,305), and

(iv) transporting subsequently solute S through porous bed I (104,204,304) to allow for the interaction with reactant R.

12. A microfluidic device in which there is microchannel structure that comprises one, two or more flow paths (101;201a,b;301a,a',b) each of which comprises a porous bed I (104,204,304) that is common for all of said flow paths and at least one of which (101;201a;301a,a') comprises a porous bed II (105,205,305) which is upstream of porous bed I (104,204,304), characterized in that one or both of porous bed I (104,204,304) and porous bed II (105,205,305) in said at least one flow path (101;201a;301a,a') comprises a solid phase material containing a generic ligand.3.

13. The microfluidic device of claim 12, characterized in the generic ligand in porous bed II (105,205,305) in one or more of said at least one flow path (101;201a;301a,a') are the same as in porous bed I.

14. The microfluidic device of claim 12, characterized in the generic ligand in porous bed II (105,205,305) in one or more of said at least one flow path (101;201a;301a,a') is an affinity counterpart (anti-ligand) to the ligand in porous bed I (104,204,304).

15. The microfluidic device of any of claims 12-13, characterized in that said ligand is selected amongst biotin and anti-biotins.

16. The microfluidic device of any of claims 12-15, characterized in that there is only one flow path (101) comprising both porous bed I (104,204,304) and porous bed II (105,205,305).

17. The microfluidic device of claim 16, characterized in that the downstream end of porous bed II (105,205,305) is abutted to the upstream end of porous bed I (104,204,304), possibly with a porous membrane between the ends.